


Evaluation of Counseling Practices and Patient's Satisfaction Offered by Pharmacists for Diabetics Attending Outpatient Pharmacies in Al Ahsa

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Abstract

Introduction: Patient counseling can be helpful in improving the outcome of disease management, particularly chronic diseases such as diabetes mellitus, which is common in Saudi Arabia. The present study looks to investigate the levels of counseling and satisfaction among patients attending diabetic clinics in outpatient hospital pharmacy in Al Ahsa, Saudi Arabia. **Method:** This is a cross-sectional investigation, carried out by using interview-structured questionnaire, targeting diabetes mellitus patients with or without comorbid states. The questionnaire was divided into 3 parts comprising of demographics, counseling types given while collecting prescription, and satisfaction rating of services provided. **Result:** More males than females participated; most of whom were college graduates older than 51 years. Sixty-three percent of the entire participants are type 1 diabetic patients, while 37% are type 2 diabetes mellitus patients. Coexistence of hypercholesterolemia was higher among type 1 diabetes patients with 51.9%, while hypertension was more common among type 2 diabetic patients representing 68.2%. Findings also showed that counseling was provided for medication use among type 1 diabetic patients but was deficient in the case of type 2 diabetic patients. Patients received low level of counseling on side effects and healthy lifestyle living. Satisfaction level was only 11.1%, indicating that counseling services might be deficient. **Conclusion:** This study has revealed poor counseling practices and low satisfaction levels in services provided by outpatient hospital pharmacies to diabetic patients. In the face of increasing prevalence of diabetes and comorbidity, counseling of diabetic patients is critical.

Keywords

patient counseling, satisfaction level, type 1 diabetics, type 2 diabetics, hypertension, outpatient pharmacies

Introduction

Patient counseling is an essential element of pharmaceutical care (1). It is about creating an awareness and helping the patients understand the purpose of prescribed medication and any attendant effects. In addition, it involves educating the patients about the disease and the dispensed medicine (2,3). Counseling encourages patients to adhere to their medications as intended and informs about their potential interactions with other drugs and food (4). Some practitioners (5) have referred to patient counseling medication therapy management particularly for patients on multiple medications due to comorbid states. It is usually an interactive session and in most cases a one-to-one affair between the pharmacist and the patient. This is to ensure that patients understand the information given to them and follow the instructions. Therefore, counseling should aim at safe and appropriate use

of medicines for a better outcome (6). It should be an integral part of medication dispensing. Chronic disease patients like diabetes mellitus patients, particularly those with comorbid states, should be given the benefit of counseling as part of disease management, and these should serve as a model

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practice (3). Studies have shown that counseling improves adherence to medication, empowers patients with the knowledge about their disease, and enjoys the experiences of participating in their disease management (7,8). Morbidity and mortality associated with chronic diseases such as diabetes mellitus are increasing worldwide in proportion, despite availability of treatments for it. To stem the tide of this rise in prevalence, services should be provided to the patients which will focus on effective management strategies aimed at reducing attendant morbidity and mortality (8). Medication therapy management is seen as a key role of clinical pharmacists and is to help in improving clinical outcomes and patients' quality of life (9). In addition, documented evidence suggests that clinical pharmacists-led counseling services prevent medication-related problems (10,11). Patients who attend counseling sessions have expectations and expect it to be met. Therefore, one of the ways of meeting their expectations will be in terms of being satisfied with counseling services provided by pharmacists. This will understandably make them a partner in their own disease management.

In this regard, patient satisfaction is considered an important component in determining the quality of care they receive from their health-care providers (4). Therefore, it is a professional responsibility of pharmacists to give information about safe and effective use of medicines and educate patients about their disease and other associated factors. Hence, patient medication counseling should be a composite part of patient education that should help them change their attitude and approach toward the disease and lifestyle modification. The objective of this study was to investigate the level of counseling among diabetes mellitus patients attending outpatient hospital pharmacies and, in addition, to assess patients' satisfaction on the counseling services provided by the pharmacists.

Methodology

Study Design

A cross-sectional study was carried out using a semistructured interview questionnaire, designed in English and translated into Arabic. This study was conducted in 3 outpatient pharmacies located in Al Ahsa, Saudi Arabia. Sample size was determined based on the number of districts within the Al Ahsa Municipality. Seven districts that were the best representative of the entire population of the municipality were selected. They include Al Khalidiyah, Al Mahasen, Al Hofuf, Al Salhiyah, Al Rashidiya, Al Mualymin, and Al Omran.

The questionnaire was designed based on the studies carried out in Cyprus and Nigeria on patients' counseling (12,13). The minimum effective sample was calculated in order to certify that a minimum number, if reached, will justify the findings of the study. The minimum effective sample size required for this study therefore was 278, as

calculated using the online sample size calculator RaoSoft, at 95% confidence interval (14). However, continuing the interview beyond the calculated sample size did not provide more additional or different new information. This was reflected in the final sample size. Purposive sampling method was used to select participants who are mainly Saudi citizens for this study. The questionnaire/interview form has 3 sections. The first section contains demographics, presence and types of other chronic disease illness including diabetes mellitus, and medications. Second section is about types of counseling received during prescription filling on medication use and adherence, side effects/contraindications, drug interactions particularly with the use of other medicaments like herbal medications, measurement of blood glucose levels and targets, and advising on healthy lifestyle. The third section includes satisfaction rating of services provided and how they have helped the patient in self-management for improved outcome. The questionnaire was validated by a pretest study conducted at King Faisal University Polyclinic outpatient pharmacy with 15 diabetic patients and was found to be conducive for proposed study. The reliability and internal consistency of the questionnaire were assessed using Cronbach α , which gave .896.

Questionnaire Distribution and Data Collection

The study was conducted from October 2016 to January 2017. A total of 299 patients were interviewed based on their willingness and consent to participate in the study. The study objectives and its expected outcome were explained to participants. Inclusion criteria were men and women living with diabetes mellitus who came for follow-up at government primary health centers within Al Ahsa municipality of Saudi Arabia. They are diabetic patients with or without any comorbid states, for example, hypertension and hyperlipidemia. Also, included in this study is that participants must have attended the same clinic for at least 3 months continuously during the period of study.

Ethical Approval and Data Analysis

Approval for this study was given by the Institutional Review Board, Deanship of Scientific Research, King Faisal University, Al-Ahsa, Saudi Arabia. Data collected were coded and analyzed using descriptive statistics with IBM SPSS Version 23 statistical software. Statistical significance was set at $P < .05$ using independent t test to compare group means and chi-square to determine association between and within groups and to determine differences within and among groups.

Results

Table 1 shows the demographics of respondents such as gender, age, nationality, education level, and outpatient

Table 1. Demographic Information of Respondents.

Demographics	Respondents		
	N = 299	Frequency (%)	
Gender	Male	170	56.9
	Female	129	43.1
Age	20-30	2	0.7
	31-40	2	0.7
	41-50	61	20.4
	51-60	123	41.1
	>60	111	37.1
Nationality	Saudi	286	95.7
	Non-Saudi	13	4.3
Educational level	Primary education	5	1.7
	High school	79	26.4
	College/university	215	71.9

attendance of participants. Data analysis shows that 56.9% were males and female represented 43.1%. Age-group distribution indicates that 41% were between the ages of 51 and 60 years, representing the highest number of participants. The majority of the participants were Saudi citizens and college graduates with 95.7% and 71.9%, respectively.

Of the participants, 41.2% had type 1 diabetes mellitus disease and were older than 60 years. Among this group, 57.8% were hypertensive (see Table 2). In addition, from the 51 to 60 age-group, 49.1% had type 2 diabetes mellitus, with 50.7% of them having hypertension and 48.6% living with hypercholesterolemia. Cholesterol levels were significantly higher ($P < .05$) in patients older than 51 years of age, while age groups between 20 and 40 years had uniquely less disease disposition. It therefore indicates that increase in age for those with either type 1 or type 2 diabetes mellitus has the propensity to have comorbidity.

Table 2. Age-Group Distribution of Diabetes Types With High Blood Pressure (HBP) and Hypercholesterolemia (HC).

Age Groups	Type 1 Diabetes Mellitus (T1DM)			Type 2 Diabetes Mellitus (T2DM)		
	Total T1DM	With HBP	With HC	Total T2DM	With HBP	With HC
20-30	2 (1.07%)	0 (0%)	2 (2.1%)	0 (0%)	0 (0%)	0 (0%)
31-40	1 (0.53%)	0 (0%)	1 (1.0)	1 (0.9%)	0 (0%)	0 (0%)
41-50	41 (21.9%)	9 (10%)	32 (33%)	21 (19.1%)	11 (14.6%)	13 (17.6%)
51-60	66 (35.3)	29 (32.2%)	37 (38.1%)	54 (49.1%)	38 (50.7%)	36 (48.6%)
>60	77 (41.2%)	52 (57.8%)	25 (25.8%)	34 (30.9%)	26 (34.7%)	25 (33.8%)

Table 3. Types of Diabetes Mellitus With Comorbid States.

Diabetes Mellitus Type	Comorbid States		
	High Blood Pressure	Hypercholesterolemia	High blood Pressure Coexisting With Hypercholesterolemia
Type 1 diabetes mellitus, 187 (63%)	90 (48.1%)	97 (51.9%)	88 (47.1%)
Type 2 diabetes mellitus, 110 (37%)	75 (68.2%)	35 (31.8%)	64 (58.2%)

Table 3 shows types of diabetes with comorbid states indicating that 63% of the participants had type 1 diabetes mellitus, of which 48.1% were hypertensive and 51.9% had hypercholesterolemia. Also, 47% of type 1 diabetes mellitus patients have comorbid states of hypertension and hypercholesterolemia. However, type 2 diabetes mellitus patients represented 37% of the study population. Of this number, 68.2% have hypertension and 31.8% of them have hypercholesterolemia.

These results show that type 1 diabetic patients with comorbid states were significantly more than those without. Also, type 2 diabetic patients presented more with hypertension compared to type 1 patients. Overall, coexistence with these comorbid states is a factor in both types of diabetes mellitus.

Figure 1 shows a display of medications dispensed to patients during their hospital pharmacy visits. It shows that insulin and metformin were the most dispensed drugs representing 97.3% and 96.4%, respectively, for both types of diabetes mellitus. Lisinopril was equally dispensed for both types with comorbid conditions. The figure also showed that patients with type 2 diabetes had a significant ($P < .05$) high use of aspirin and statins (70.9 and 69.1, respectively).

Table 4 shows satisfaction levels of patients for different counseling points that should be given to both type 1 and type 2 diabetics during medication dispensing. The level of satisfaction on current health conditions and medication use/adherence represented 72.9% and 65.2%, respectively. Generally, the patients were not satisfied with advice received on medication side effects/contraindications, advice on drug interactions, missed medications, and blood sugar/blood pressure targets values, as it indicated low level of percentage satisfaction. These were represented as 49.2%, 59.9%, 63.2%, and 70.2%, respectively. The results showed that for all the advice that should be given, there is a relationship between different counseling and level of satisfaction ($P < .05$).

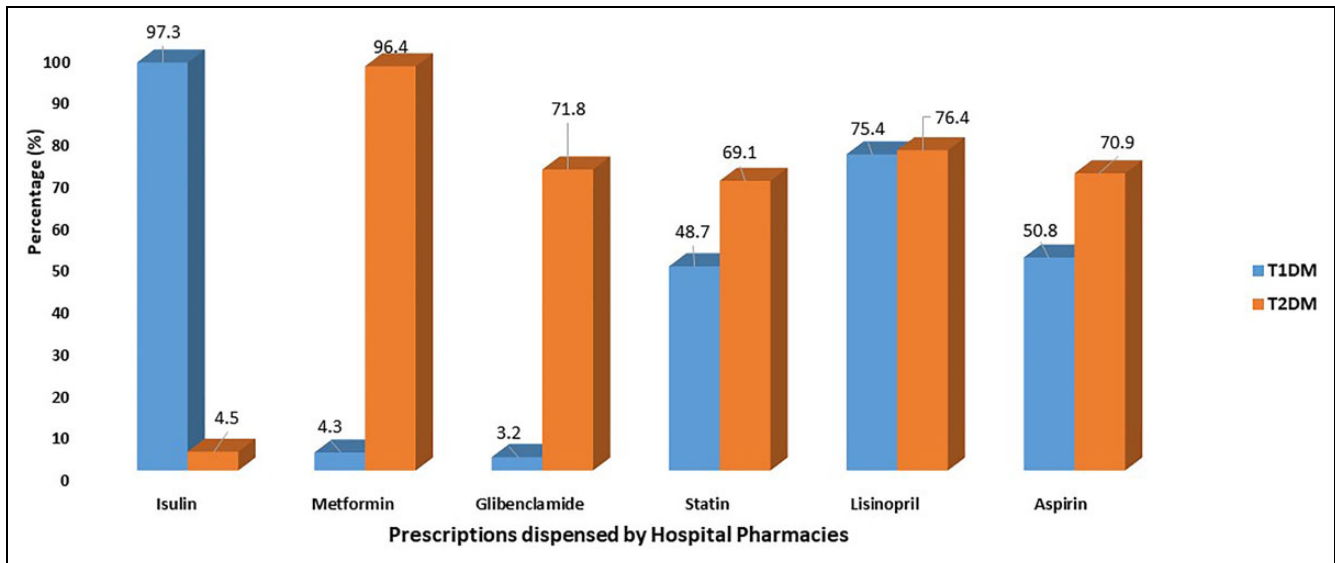


Figure 1. Medications regularly collected from hospital pharmacy.

Table 4. Rating of Counseling Services Provided by Hospital Pharmacists During Prescription Filling.^a

Types of Counseling Received During Prescription Collection	Rating by Respondents	
	Satisfied, (n) %	Not Satisfied, (n) %
Providing advice on a current health and other diseased condition	(218) 72.9	(81) 27.1
Providing advice on medication use and adherence	(195) 65.2	(104) 34.8
Providing advice on side effects and contraindications	(152) 50.8	(147) 49.2
Providing advice on drug interactions of medications	(120) 40.1	(179) 59.9
Providing advice on missed medication	(110) 36.8	(189) 63.2
Providing advice on medicines storage	(90) 30.1	(209) 69.9
Talk about symptoms of medication	(91) 30.4	(208) 69.9
Ask about other medications or use of herbal	(90) 30.1	(209) 69.9
Talking about how often BS/BP levels should be measured, how many times a day and when	(89) 29.8	(210) 70.2
Discuss your BS/BP target values and explaining why	(87) 29.1	(212) 70.9
Discuss interpretations of BS target values and lifestyle modifications based on BS/BP readings. If not meeting the target what to do	(81) 27.1	(218) 72.9
Disposing of medicines you no longer need	(80) 26.8	(219) 73.2
Providing advice on health services or information available elsewhere	(78) 26.1	(221) 73.9

Abbreviations: BS, Blood Sugar; BP, Blood Pressure.

^aChi-square test also found a relation between satisfied and not satisfied with a P value of .000. The result is significant at P < .05.

Table 5 summarizes key counseling components for management of diabetes mellitus. It indicates that on medication use and adherence, type 1 diabetic patients appeared to have

been provided with this advice compared to type 2 diabetic patients. This is represented as 74.3% and 51.8%, respectively. On the advice about side effects and contraindication, also type 1 diabetic patients (58.3%) were provided this information when compared to type 2 diabetic patients (37.1%). However, counseling on lifestyle modification for both types of diabetic patients was poor, as patients indicated that they were not lacking. Statistical analysis, comparing advice provided and not provided for both types of diabetes, showed a highly significant association (P < .05). Similar trend was observed for type 2 diabetes. However, comparing the counseling services received between type 1 and type 2 diabetes mellitus showed that only advice on smoking was significant (P < .05), while advice on exercise was marginal.

On the level of professional counseling received from pharmacists as shown in Figure 2, most patients were not adequately counseled about lifestyle modification. The 3 components of lifestyle modification were smoking, exercise, and healthy eating. These represented 93.6%, 92.9%, and 74.7%, respectively, of agreement that they were not given this advice.

Overall satisfaction rating by patients is shown in Figure 3. The level of satisfaction indicated by patients for the counseling services provided to diabetic patients appeared to be significantly low, that is, 11.1% as satisfied and 68.2% of the patients were not satisfied.

Discussion

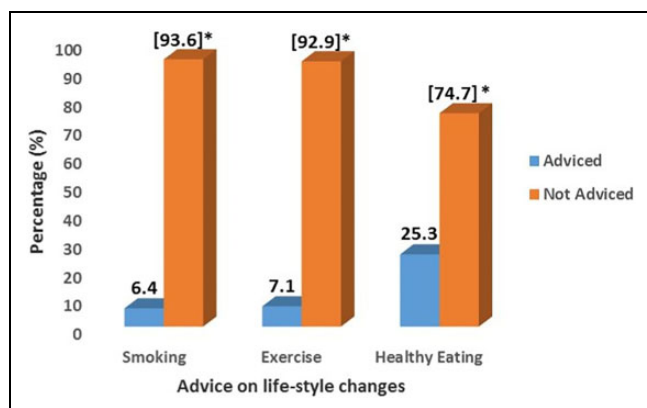
Evidence has shown that nonadherence to medical advice by chronic disease patients such as in cases of diabetes mellitus could lead to increased morbidity and mortality. This non-adherence could potentially increase the risk of patients to a possible lifelong disability (15). The potential risks of morbidity and premature death could be reduced by counseling

Table 5. Analysis of Services Provided and Not Provided on Key Counseling Components in T1DM and T2DM Management.^a

Advice Provided	Disease			
	Diabetes Mellitus Type 1		Diabetes Mellitus Type 2	
	Provided (%)	Not Provided (%)	Provided (%)	Not Provided (%)
Medication use and adherence	139 (74.3%)	48 (25.7%)	57 (51.8%)	53 (48.2%)
Side effects and contraindications	109 (58.3)	78 (41.7)	43 (39.1%)	67 (60.9%)
Exercise	17 (9.1%)	170 (90.9%)	4 (3.6%)	106 (96.4%)
Smoking	16 (8.6%)	171 (91.4%)	3 (2.7%)	107 (97.3%)
Healthy eating	50 (26.7%)	137 (73.3%)	25 (22.7%)	85 (77.3%)

Abbreviations: T1DM, type 1 diabetes mellitus; T2DM, type 2 diabetes mellitus.

^aThe chi-square statistic *P* value is .00001. The result is significant at *P* < .05.

**Figure 2.** Level of professional counseling given to patients about lifestyle modifications.

**p* < 0.05.

**Figure 3.** Overall satisfaction rating of services provided to patients receiving diabetic medications along with other comorbid disease states.

***p* < 0.001.

of diabetic patients living with comorbid conditions. The awareness of potential dangers and their consequences will make patients to follow counseling advice. In this study, we set out to assess the level of counseling provided to diabetic

patients and how satisfied they are with the level and type of counseling provided. The presenting findings in which majority of the patients sampled were between the ages of 51 and above are similar to those of earlier reports by Selvin et al (16), who reported prevalence of diabetes to be among the elderly individuals. Other studies have also reported that diabetes and its complications increase with increasing age (17,18). Thus, age is a major risk factor for diseases inclusive of diabetes mellitus, and this factor can be affected by educational levels of the patients. Documented evidence indicates that literacy status is a factor in the self-management of diabetes and that this can have an impact on the treatment outcome in patients (19). A significant number of the patients sampled in the present investigation were college graduates and is therefore expected that the counseling of this literate level should enhance self-management. An earlier Australian study reported that patients with high educational status respond better to interventions than those with lower literacy levels (20). It is a fact that the use of insulin in self-management of diabetes undoubtedly requires counseling for both type 1 and 2 diabetics. In view of the fact that insulin delivery system has undergone many changes over the years due to evolving technology, it is pertinent that patients' knowledge about proper insulin injection techniques be paramount to enhance self-management (21). Counseling will also address issues such as how to calculate and titrate insulin doses. Thus, educating patients about injection techniques (22) will go a long way in self-management among diabetic patients. It should also teach on how to avoid and recognize signs of hypoglycemia and subsequently self-manage it (23). As indicated earlier, there was a higher incidence of diabetes mellitus among the elderly individuals in the present findings, and this appears to be consistent with the report of Cheng et al (24). These observations point to age-related diabetes associated with hypertension and hyperlipidemia as had been documented by other investigators (24).

On diabetic patient counseling, our study has shown that counseling among these patient groups is poor, findings that are consistent with those of Yang et al (25) who reported general counseling among patients to be low. Counseling on

use of diabetic medications cannot be overemphasized, as it plays a crucial role in the disease management thereby preventing chronic complications resulting from them (26). To this effect, there are documented evidence which has confirmed that the complications of diabetes mellitus can be reduced by strict glycemic control (27). This is however said to be largely dependent on patients' motivation and adherence to medications when enhanced through counseling, the reason being that patients when motivated will steadfastly adhere to prescribed therapeutic plan depending on the assistance they get. Undoubtedly, it will help them establish a tight glycemic control. Our finding showed that a significant number of type 1 diabetic patients received advice on the use of medication and adherence compared to type 2 patients. These findings are similar to those of studies in Malaysia, where it had been observed that pharmacist-led education could offer patients support in general knowledge about diabetes management and improve medication adherence (28). It is unequivocal that satisfaction and medication adherence are important indices of diabetic care, irrespective of educational status (29). Satisfaction level among patients with a lower educational level was found to be low, according to the study of Biderman et al (30). In another study, Bener et al (31) observed that patient satisfaction was positively associated with those having higher levels of education but lower in patients with disease-related complications. However, a study in Khartoum, Sudan, concluded that satisfaction levels were lower in primary care health centers compared to specialized diabetes centers (32). Our study showed low satisfaction level among educated patients. Another report from Saudi Arabia revealed that educational level had no impact on glycemic control, but patients who are well educated had better knowledge of diabetic complications (33). Therefore, to improve their satisfaction level, their specific needs should be met through counseling. Thus, the issue of poor counseling services generally raises many questions about the way pharmaceutical care is delivered in the region of the present investigation. Similar studies in the same geographical region have reported barriers to patient counseling, one of which is stipulated to include gender segregation due to cultural issues. According to Al-Laif et al (34), males appeared to be more satisfied with counseling received when compared to females in both hospital and retail outlets. In another similar study conducted at community pharmacy outlets within the same region, a 10% counseling level was reported among patients (35). The study indicated that male pharmacists providing counseling services in community pharmacies could have been the reason attributed to the low satisfaction levels shown in females. In the hospital environment where we conducted this study, female pharmacists are available and we did not find any gender difference in satisfaction level in the ratings of counseling services provided. This might be due to the fact that most of the hospital pharmacists hold a bachelor's degree in pharmacy with minimum clinical skills as had earlier been documented (36). These findings are contrary to those reported in Riyadh, where the

reason for an overall low provision of patient counseling services (37%) in the area was attributed to the fact that pharmacy graduates had minimum clinical exposure (36). Their study (36) went on to report that only 26% of discharged patients received counseling about their medications. In another study conducted in Qatar, a poor patient counseling practice was reported during which it had been observed that the pharmacists were focusing mainly on drug names (37). Generally, Paravattil et al (37) also observed that chronic disease management skills of pharmacists were lacking with many of them referring patients back to the physician.

While the importance of counseling practice as a form of patient education cannot be overemphasized, the findings in the present study showed that advice on key issues such as medication use, drug side effects, and adherence was not adequately provided for type 2 diabetic patients. Patients who are new entrants to the use of oral hypoglycemic agents and/or insulin may not be adherent to using their medications as prescribed if not counseled because of the hypoglycemia it causes.

Also, counseling on lifestyle changes, which is the cornerstone of management as recommended by treatment guidelines, was seen to be grossly inadequate. Studies have shown that lifestyle counseling is associated with the achievement of target glycemic level, blood pressure, and low-density lipoprotein control (15,38). The overall satisfaction level by patients was found to be low on all the services provided by hospital pharmacists in the present investigation. This is contrary to the fact that counseling by hospital pharmacists had been shown to be beneficial to diabetic patients, in helping them meet target blood glucose and blood pressure levels (39). It would therefore be expected that hospital pharmacies play this supportive role and educate patients about their disease and medication during prescription filling. This definitely will help diabetic patients in improving self-care management and ultimately their quality of life.

Conclusion

Patient counseling should be an integral component in the management of comorbid states in diabetes. The present study has revealed inadequate counseling practices and low satisfaction levels about services provided by hospital pharmacies for diabetic patients with comorbid states. The increasing prevalence of diabetes and associated diseases in this part of the world needs attention. Therefore, professional counseling of patients with diabetes mellitus is critical. Efforts should be made by hospital administrators to improve this important aspect of pharmaceutical care.

Limitation

This study has some limitations in that the focus group evaluated might be relatively small compared to the population

of diabetic patients in Al Ahsa municipality. However, samples that are too large may waste time and resources. The responses of the participants might have been affected by the fact that the interviews were done in the premises of the government primary health-care clinics. In addition, interviewing family members and health-care providers would have been worthwhile.

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Supplemental Material

Supplemental material for this article is available online.

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